

WHAT IS CLAIMED IS:

1. A power module wherein a power circuit section including a plurality of bus bars is disposed through an insulation layer on a circuit arrangement surface of a heat radiation member, comprising:

an external connection terminal formed by folding up an end of each of said bus bars from said circuit arrangement surface;

an enclosure wall member disposed on said heat radiation member to surround said power circuit section including said external connection terminal;

a connector housing constituting an external connection connector that includes a bottom portion and a hood, said bottom portion being provided with a terminal through-hole into which said external connection terminal is inserted, said hood surrounding said external connection terminal that projects through said terminal through-hole toward the opposite side from said circuit arrangement surface, said external connection connector being adapted to be coupled to another connector together with said external connection terminal; and

a waterproof layer formed within said enclosure wall member so that at least a part of said power circuit section is sealed and said terminal through-hole is sealed.

2. A power module according to Claim 1, wherein said waterproof layer is formed by filling an inside of said enclosure wall member with a liquid waterproof resin, flowing a part of said waterproof resin through said terminal through-hole into said connector housing, and solidifying said waterproof resin.

3. A power module according to Claim 1, wherein said connector housing is integrated with said enclosure wall member.

4. A power module according to Claim 2, wherein said connector housing is integrated with said enclosure wall member.

5. A power module according to Claim 1, wherein said connector housing is provided in a bottom wall, except a connector contact surface on which a distal end of another connector contacts, with a resin reservoir recess depressed toward said heat radiation member, wherein said terminal through-hole is formed in said resin reservoir recess, and wherein a top surface of said waterproof layer is positioned within said resin reservoir recess.

6. A power module according to Claim 2, wherein said connector housing is provided in a bottom wall, except a connector contact surface on which a distal end of another connector contacts, with a resin reservoir recess depressed toward said heat radiation member,

wherein said terminal through-hole is formed in said resin reservoir recess, and wherein a top surface of said waterproof layer is positioned within said resin reservoir recess.

7. A power module according to Claim 3, wherein said connector housing is provided in a bottom wall, except a connector contact surface on which a distal end of another connector contacts, with a resin reservoir recess depressed toward said heat radiation member, wherein said terminal through-hole is formed in said resin reservoir recess, and wherein a top surface of said waterproof layer is positioned within said resin reservoir recess.

8. A power module according to Claim 5, wherein a plurality of terminal through-holes are provided in said resin reservoir recess.

9. A method for producing a power module, comprising:
arranging on a circuit arrangement surface of a heat radiation member a power circuit section including a plurality of bus bars and an external connection terminal formed by folding up an end of at least one of said bus bars;

attaching closely to said circuit arrangement surface an enclosure wall member that surrounds said power circuit section including said external connection terminal;

forming an external connection connector adapted to be coupled to another connector through said external connection terminal that is inserted into said terminal through-hole in a connector housing, said connector housing including a bottom portion and a hood, said bottom portion being provided with said terminal through-hole into which said external connection terminal is inserted, and said hood surrounding said external connection terminal that projects through said terminal through-hole toward the opposite side from said circuit arrangement surface; and

forming a waterproof layer for sealing at least a part of said power circuit section and for sealing said terminal through-hole by filling a space enclosed by said enclosure wall member with a liquid waterproof resin, flowing said waterproof resin into said connector housing to a given level, and solidifying said waterproof resin.

10. A method for producing a power module according to Claim 9, wherein said enclosure wall member integrated with said connector housing is attached to said circuit arrangement surface in said second and third steps.

11. A method for producing a power module according to Claim 9, wherein said enclosure wall member has a seal member for a resin on an end surface opposed to said heat radiation member, and wherein said enclosure wall member is attached to said circuit arrangement surface in the second step so that said seal member for a resin is contacted closely with said circuit arrangement surface.

12. A method for producing a power module according to Claim 10, wherein said enclosure wall member has a seal member for a resin on an end surface opposed to said heat radiation member, and wherein said enclosure wall member is attached to said circuit arrangement surface in the second step so that said seal member for a resin is contacted closely with said circuit arrangement surface.

13. A method for producing a power module according to Claim 9, wherein the forming step uses, as a connector housing forming said external connection connector, a connector housing provided in a bottom wall, except a connector contact surface on which a distal end of another connector contacts, with a resin reservoir recess that is depressed toward said heat radiation member and is provided with a terminal through-hole, and wherein the fourth step fills said resin reservoir recess with said waterproof resin until a top surface of said waterproof layer reaches a given level in said resin reservoir recess.

14. A method for producing a power module according to Claim 10, wherein the third step uses, as a connector housing forming said external connection connector, a connector housing provided in a bottom wall, except a connector contact surface on which a distal end of another connector contacts, with a resin reservoir recess that is depressed toward said heat radiation member and is provided with a terminal through-hole, and wherein the fourth step fills said resin reservoir recess with said waterproof resin until a top surface of said waterproof layer reaches a given level in said resin reservoir recess.

15. A method for producing a power module according to Claim 11, wherein the forming step uses, as a connector housing forming said external connection connector, a connector housing provided in a bottom wall, except a connector contact surface on which a distal end of another connector contacts, with a resin reservoir recess that is depressed toward said heat radiation member and is provided with a terminal through-hole, and wherein the fourth step fills said resin reservoir recess with said waterproof resin until a top surface of said waterproof layer reaches a given level in said resin reservoir recess.

16. A method for producing a power module according to Claim 13, wherein the arranging step uses, as a power circuit section to be arranged on a circuit arrangement area, a power circuit section including one or more electronic parts having a leg-like terminal, and wherein the third step uses, as a connector housing forming said external connection connector, a connector housing in which a bottom surface of said resin reservoir recess is set to be higher than an upper end of said leg-like terminal upon filling of said waterproof resin.

17. A method for producing a power module according to Claim 13, wherein the forming step uses, as a connector housing forming said external connection connector, a

connector housing in which an upper edge of said resin reservoir recess is set to be higher than an upper end of said electronic parts upon filling of said waterproof resin.

18. A method for producing a power module according to Claim 16, wherein the forming step uses, as a connector housing forming said external connection connector, a connector housing in which an upper edge of said resin reservoir recess is set to be higher than an upper end of said electronic parts upon filling of said waterproof resin.